Survey of **SMALL BUSINESS BARRIERS** to DEPARTMENT of **DEFENSE CONTRACTS**

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A key tenet of the Better Buying Power initiatives is to increase small business participation in Department of Defense contracting. The department has had mixed success in retaining small businesses and meeting small business contracting goals. Results of a survey given to 681 small business leaders show many factors commonly exist that prevent small businesses from pursuing defense contracts. Some factors are more common than others, with the most cited factors related to a lack of communication from government leads or to the government taking too long to give approvals and make decisions. Statistical evidence also supports the perceptions, of smaller and newer small businesses, that the defense business is more challenging for them than for their larger and more experienced competitors. However, this turned out to be the case for only a subset of the factors we explored.

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Image designed by Diane Fleischer

Creating more than half of this country's gross domestic product and seven out of every 10 new jobs (Graves, n.d., p. 1), small business holds a place of importance in the U.S. economy that cannot be overstated. Small businesses are also a key driver of innovation, producing on average 13 times more patents per employee than large firms (Mielach, 2012, para 4).

Small businesses are also an important contributor in defense acquisition, providing innovation, competition, and services at great value (Simmers, 2011). The Department of Defense (DoD) has recognized that it must attract and retain small businesses in order to continue to create and maintain world-class weapon systems. Department leadership has pushed for increased small business roles and opportunities through the Better Buying Power initiatives, seeking to provide "the maximum practicable opportunity" for small businesses (Kendall, 2015, p. 25). The department has also set a small business prime contracting goal, which has ranged from 21 to 23% of all contract obligations per year from 2011 through 2016.

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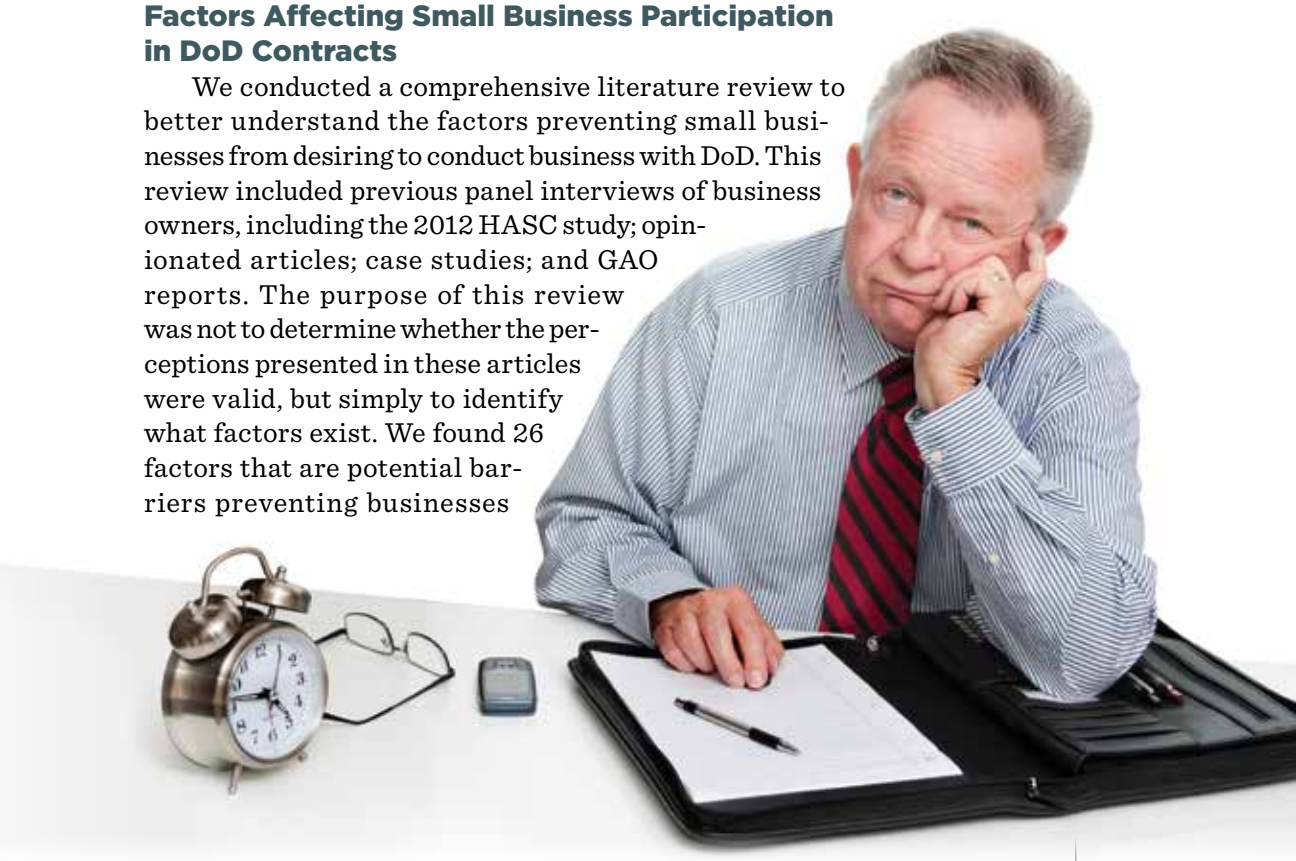
The DoD has had mixed success in meeting its small business prime contracting goal. It had missed this goal for 7 years in a row before finally meeting it in 2014 (Serbu, 2015, para 1). Some attribute this to the nature of what the department buys: aircraft, tanks, and large weapon systems often beyond the capabilities of small businesses (Lee, 2012). However, critics of the Pentagon's small business policies claim it is too simple and self-centered (Chandler, 2014), focusing on a single contract obligation goal that does not take into account the needs and challenges from the perspective of the small businesses themselves. Businesses will respond to a government request for proposal (RFP) only if it presents a satisfactory business case, something the government often overlooks (Chandler, 2014). Attracting small businesses to conduct business with DoD has been a challenge. An analysis of small businesses in the Central Contractor Registration database showed that of the small businesses conducting business with DoD from 1997 to 2007, 44% had stopped conducting business with DoD in 2008 (Moore et al., 2008, p. 85). Only 1.9% of the businesses had continuous

contracts with DoD over the 11 years. Further, 46% of small businesses that received contracts during this period received only one contract, which was valid for a year or less, possibly indicating an unwillingness of businesses to pursue additional opportunities after their initial contract was complete (Moore et al., 2008, p. 72).

The challenges facing businesses in defense contracting have been previously well documented. The Lexington Institute recently published an article calling the DoD a "difficult buyer" that discourages businesses from submitting bids on defense contracts and proposing that industry and government take more of a partnership approach to contracting (Chandler, 2014). The Government Accountability Office (GAO) has also published multiple reports claiming the DoD needs to improve reporting and tracking of small business financial obligations (Neumann, 2015; Shear, 2011; Woods, 2013). Most recently, the challenges related to small businesses have gotten the attention of Congress, and the House Armed Services Committee (HASC) directed a panel to investigate challenges currently affecting the defense industry base.

Factors Affecting Small Business Participation in DoD Contracts

We conducted a comprehensive literature review to better understand the factors preventing small businesses from desiring to conduct business with DoD. This review included previous panel interviews of business owners, including the 2012 HASC study; opinionated articles; case studies; and GAO reports. The purpose of this review was not to determine whether the perceptions presented in these articles were valid, but simply to identify what factors exist. We found 26 factors that are potential barriers preventing businesses



from pursuing an initial contract or follow-on contracts with DoD. The factors we found fit into three categories: the contract solicitation and award process, contract requirements, and contract execution. A summary of the barriers we found in each category is provided below.

The Contract Solicitation and Award Process

The contract solicitation documentation and the metrics for evaluating proposals were cited as being too complex and difficult to understand by business leaders (HASC, 2012). A lack of communication during the solicitation process was also cited as an issue, with businesses struggling to get answers to their questions on solicitation documentation and desiring more feedback on proposals that did not win a contract (Maser & Thompson, 2013). Given the complexity of the solicitation documentation, the amount of paperwork required to submit proposals and insufficient time to develop

proposals were also cited as barriers (Krieger, 2015). Previous studies also found that delays in making contract awards have created financial hardships on small businesses (Chaplain, 2010).

> ***The literature review revealed that many small businesses continue to struggle with defense business after winning contracts.***

Contract Requirements

Defense contracts have unique requirements for placing a bid that are not found in the commercial world. While many of these requirements serve a good purpose—often to protect the government—they were also cited to be barriers to defense business in the articles we reviewed. Contract requirements that were cited as being issues in previous studies include surety bonds, government cost accounting standards, export control regulations (International Traffic in Arms), and a past performance rating on previous government contracts (HASC, 2012). Regulations, both the complexity and the number of them, were also cited as an issue (Friar, 2015). Protecting proprietary data was another area of concern for businesses in previous case studies (Chaplain, 2010). Negotiation of data rights has been getting an increased amount of attention in the last few years, both from industry and the government (Erwin, 2014). Another issue with contract requirements cited in previous studies is technical requirements being written too narrowly or seemingly catering to a particular vendor (Chaplain, 2010), thus preventing other businesses from reasonably competing for these solicitations. Contractor profits have long been a source of contention and were also cited as a barrier to defense contracts, because many businesses can make higher margins in the commercial sector (Chandler, 2014).

Contract Execution

The literature review revealed that many small businesses continue to struggle with defense business after winning contracts. Cited barriers associated with contract execution include issues getting payments for completed work or payments taking too long, challenges contacting government leads or government leads not being helpful when contacted, contract modifications taking too long, and approvals taking too long (Krieger, 2015; Mills, 2010).

Research Hypothesis Methodology

Based on our literature review, there is no question that barriers exist and that they prevent small businesses from desiring to pursue defense contracts. What is unknown is how common these barriers are. Are they widespread issues or isolated incidents? We wanted to gain more insight into these barriers and how they affect small business participation in defense contracts. Specifically, we wanted to determine the following:

- How common are the previously identified barriers to defense business? The prior works cited above are either opinionated articles or are studies conducted with a handful of small businesses. A recent large-scale study with quantitative data on these barriers does not exist.
- How do these barriers vary by industry or business type? DoD conducts business in numerous areas, and previous studies have argued that a rigid "one size fits all" contracting approach may not be appropriate (Blakey, 2011, p. 4).
- Do new small businesses perceive any of these potential barriers to be more of an issue than those that have extensive experience conducting defense business? Studies have shown that "nontraditional" small businesses with little to no government experience struggle to compete for defense contracts (Cox, Moore, & Grammich, 2014). Many of these nontraditional small businesses have extensive commercial experience and/or new and innovative technologies that the department could use (Freedberg, 2014).
- Do smaller small businesses perceive any of these barriers to be more of an issue than those that are larger but still qualify as a "small business"? The qualifications to be considered a small business vary by industry, but are on the order of 500 to 1,500 employees. Previous studies have cited these qualifications as too large (Bail, 2010), stating that smaller small businesses with tens of employees cannot compete for small business set-asides against those with hundreds or thousands of employees.

To gain further insight into our research hypothesis, we developed and administered a survey for small businesses. A large-scale survey was administered to small businesses that had formerly conducted business with or are currently conducting business with the DoD. A mailing list was

developed from contract award data and small business registries. An electronic mail invitation was sent directly to the business CEO, president, or business development lead if the information was available (this information was available for 78% of the invitations that were sent). Otherwise, the invitation was sent to a publicly known address accompanied by a request that it be forwarded to the appropriate point of contact. The survey was conducted from September to November 2015, and we received 681 responses from small businesses.

The first portion of the survey consisted of collecting demographic information about the business: primary line(s) of business, number of employees, and business history with DoD. The participants were then given a list of 26 factors and asked to rate the importance of each factor in their decision not to pursue additional defense business opportunities. The 26 factors were selected based on our literature review of previous articles on the subject. Each of the factors was rated using a 5-point Likert scale ranging from "not a factor" to "very important factor." The respondents were also given

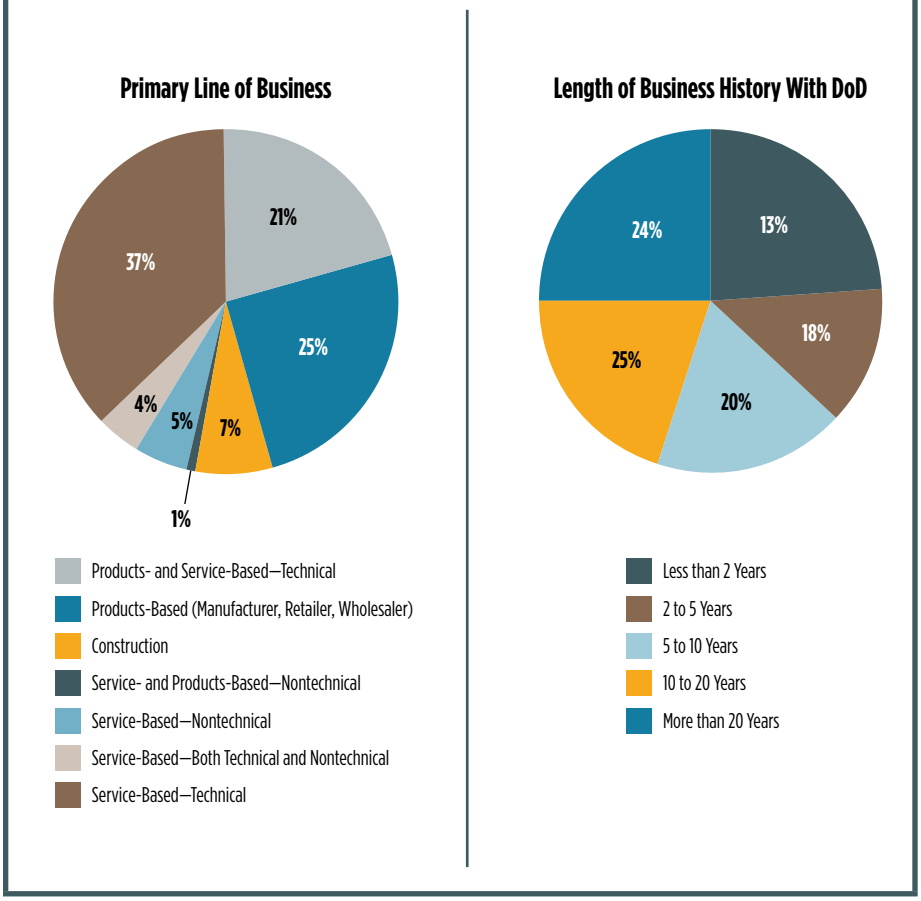
an option to select "don't know or no opinion" for each factor; for analysis purposes, we discarded both these responses and responses that were left unanswered. Participants were also given three open-ended qualitative questions to express any other potential barriers not considered in the Likert-scale questions, to provide examples, and to offer suggestions on how to make defense business more attractive.

Demographics

Survey respondents included businesses representing the major areas in which DoD conducts business. Respondents included "technical" service-based businesses such as small business innovation research (SBIR) participants and engineering support firms, "nontechnical" service-based businesses providing services DoD uses every day (such as janitorial and grounds maintenance), product-based businesses such as manufacturers

and retailers, and construction businesses. Many of the respondents conduct business with DoD in multiple areas. Respondents' length of experience conducting business with DoD spanned a wide range, from businesses relatively new to the industry (1–2 years) to ones conducting business with DoD for more than 20 years (Figure 1).

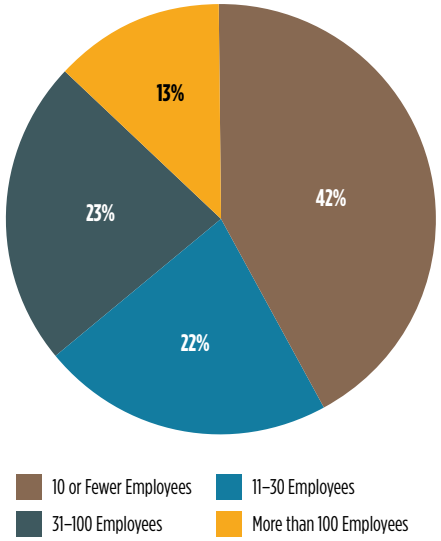
FIGURE 1. SURVEY RESPONDENTS: PRIMARY LINE OF BUSINESS AND LENGTH OF BUSINESS HISTORY



Respondents also included small businesses having a fairly wide range in size. Many respondents had only a handful of employees working for their business; 42% had 10 or fewer, and 64% had 30 or fewer. The large majority—87%—had fewer than 100 employees. We also received responses from

the "larger" businesses with several hundred employees that do still qualify for small business contracts, making up 13% of the total survey respondents (Figure 2).

FIGURE 2. SURVEY RESPONDENTS: NUMBER OF EMPLOYEES

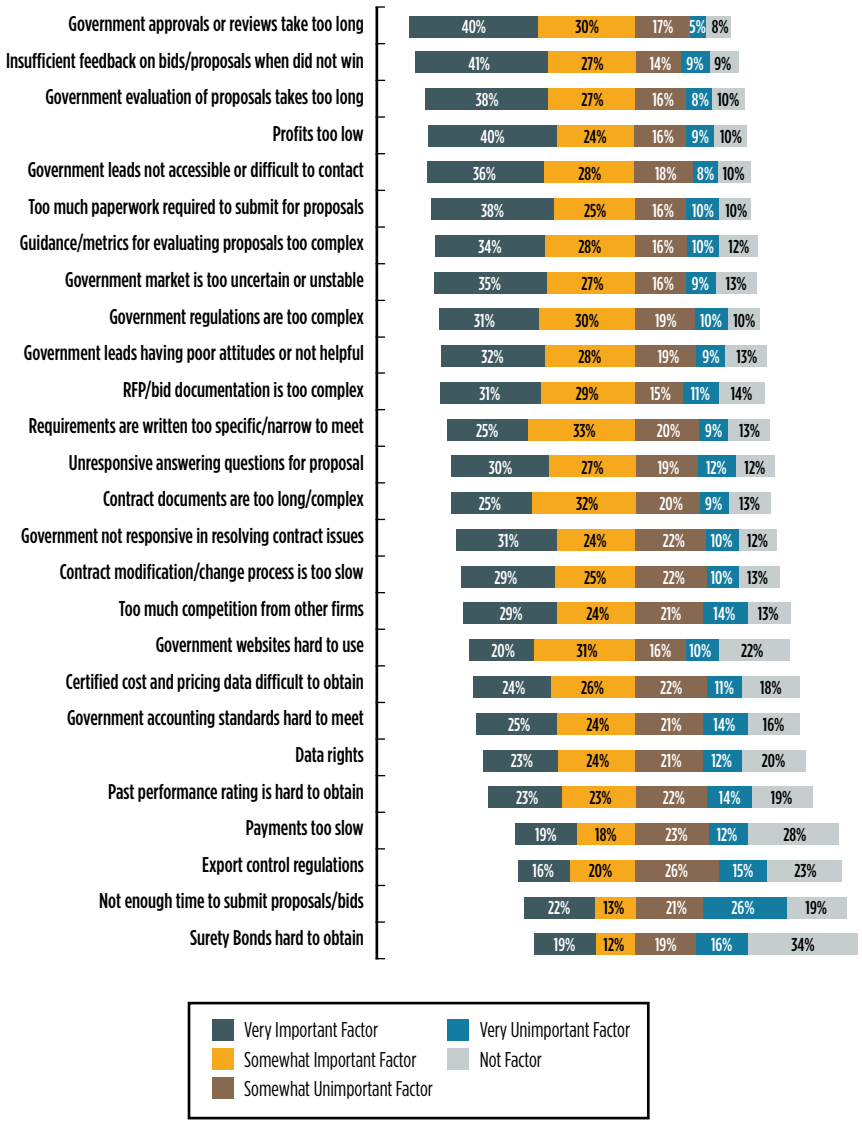


Quantitative Survey Results

The survey results show that of the 26 potential barriers surveyed, most were perceived to exist to a reasonably common extent; 19 of them were rated as a "somewhat important" or "very important" barrier by more than half of the respondents in their decision not to pursue additional business opportunities with the DoD. A smaller, although fairly significant, proportion of the respondents cited the barriers as being a "non-issue" or only "very minor," ranging from 13% to half of the respondents. The full results are shown in Figure 3.

FIGURE 3. SURVEY RESULTS

Survey Results—All Responses



The barriers in Figure 3 are ranked from top to bottom in the order they were cited as being "very important" or "somewhat important," the most to the least. Four of the five top-ranked barriers—approvals taking too long, insufficient feedback on proposals, proposal evaluations taking too long, and inaccessible government leads—are directly related to a lack of communication from government leads or to the government taking too long to make approvals and decisions. Sixty-five to 70% of respondents rated these as either "somewhat important" or "very important." Waiting for approvals was the top-ranked factor, with many respondents giving examples of waiting for approvals during both the contract award process and during contract execution. One respondent provided an example in which it took months to get approved to place a bid for parts, only to get approval after the solicitation had closed. Contract award times on the order of 6 months to a year for simple contracts were commonly cited by the respondents. One respondent gave an example of choosing to "no-bid" a phase II SBIR contract after winning a phase I contract, explaining that they could not afford to keep the company's principal investigator on the payroll for the amount of time the government takes to award the contract. One respondent questioned how the government can take excessive times to award contracts and give minimal time for businesses to prepare proposals and suggested the government be held to the same timeframe as they are. The final barrier ranked in the top five was low profits, long a source of contention, which was cited as the fourth most important barrier, with 64% of respondents naming it as an important issue preventing them from pursuing additional defense business opportunities. Many respondents referred to profit levels decreasing on government contracts, often to "single digit levels." Respondents said that profit levels of 10 to 15% would normally be acceptable. However,

defense contracts require extensive overhead to develop proposals and meet other contract requirements, such as accounting standards, surety bonds, and security clearances. This "excessive" overhead further eats into profits and makes profit levels of 10 to 15% unattractive and profit levels less than this unsustainable.

> ***Numerous respondents also felt that government regulations favor larger businesses, as small businesses have to comply with the same regulations, but cannot hire proper personnel to understand them.***

Sixty to 63% of respondents ranked three of the remaining barriers, among the 10 most cited, as "somewhat important" or "very important." These are associated with the large amount of effort and specialized knowledge required by the defense acquisition process: too much paperwork required to submit proposals (ranked sixth), guidance/metrics for evaluating proposals being too complex (ranked seventh), and government regulations being too complex (ranked ninth). Many respondents cited the need to hire subject matter experts to fully understand government solicitations and regulations. Numerous respondents also expressed that government regulations favor larger businesses, as small businesses have to comply with the same regulations, but cannot hire proper personnel to understand them. Respondents cited costs for the business and planning effort to develop proposals on the order of tens to hundreds of thousands of dollars. This is significantly higher than commercial proposal costs, leading them to pursue commercial contracts in place of defense contracts. The government market being too unstable was ranked eighth, with many of the respondents noting that the recent instability of budgets and contract awards has reduced their ability to plan and conduct business development, also further eating into profits. Government personnel not being helpful when contacted was ranked 10th.

Following the top 10 cited barriers, the factors are largely focused on the contract-solicitation-and-award process and issues with contract documents. For the contract-solicitation-and-award process: proposal documentation being too complex was ranked 11th, requirements in the

solicitation being written too narrowly to be reasonably met was ranked 12th, and the government not being responsive in answering questions during the solicitation period was ranked 13th. Many respondents noted that they had regularly noticed solicitations put out for competition that were seemingly tailored to a particular vendor, as the solicitation had very specific requirements that no other vendor could reasonably meet. For issues with contract documents: contract documents being too long and complex was ranked 14th, the government not being responsive in resolving contract issues was ranked 15th, and the contract modification process being too slow was ranked 16th. One respondent noted that the slow pace of contract and requirement modifications limited the number of innovations they could provide to the government.

Contract requirements unique to defense contracts were among the lowest ranked barriers. Certified cost data, government accounting standards, data rights, past performance ratings, export control regulations, and surety bonds were ranked 19th, 20th, 21st, 22nd, 24th, and 26th, respectively. In general, a minority of the respondents—31 to 50%—rated these factors as "somewhat important" or "very important." This indicates that although these were cited in previous studies and in this study, they are less widespread as barriers for small businesses than the other barriers already mentioned.

Differences by Industry

We divided the survey responses into four independent groups, based on primary line of business: construction, technical service-based, nontechnical service-based, and product-based. For this portion of the analysis, respondents that conducted business in multiple areas were discarded.

The Mann-Whitney and Kruskal-Wallis statistical tests are commonly used to determine whether population medians are equal or differ among independent groups. The tests use a ranking methodology in which all responses for a factor are ranked from largest to smallest and then compare the mean ranking for each independent group. Table 1 provides the factors that differed enough between industries to be statistically significant, based on pairwise Mann-Whitney analysis. The *z* values for the Kruskal-Wallis test are also shown. The *z* value helps to interpret how the average rank for each group compares to the ranks from all groups. A negative *z* value indicates that the particular group perceived the barrier to be less important when compared to all groups, and a higher *z* value indicates that the particular group perceived the barrier to be more important when compared to all groups. As the absolute value of the *z* value gets larger, the further away a

particular group's average rank gets from the overall average rank. A greater absolute value indicates that the group perceived the barrier to be more or less of a barrier to a greater extent when compared to a lesser absolute value. Based on these tests, we found that the majority of the factors—21 of the 26—presented no statistically significant results. The five that did present statistically significant results are shown in Table 1.

TABLE 1. STATISTICALLY SIGNIFICANT DIFFERENCES BETWEEN INDUSTRIES

Barrier	Result	Kruskal-Wallis *z* value
Government websites hard to use	Product-based small businesses perceive this to be MORE of a barrier than the other three industries do.	Product: 2.80
		Technical: -1.91
		Nontechnical: -1.14
		Construction: -0.34
Data rights: government requesting proprietary information	Technical service-based and product-based small businesses perceive this to be MORE of a barrier than nontechnical service-based and construction small businesses.	Product: 2.43
		Technical: -0.27
		Nontechnical: -1.70
		Construction: -2.33
Export control regulations	Technical service-based and product-based small businesses perceive this to be MORE of a barrier than nontechnical service-based and construction small businesses.	Product: 0.72
		Technical: 1.67
		Nontechnical: -2.26
		Construction: -2.72
Payment issues	Product-based small businesses perceive this to be LESS of a barrier than the other three industries do.	Product: -3.36
		Technical: 2.30
		Nontechnical: 0.96
		Construction: 0.69
Surety bonds being difficult to obtain	Technical service-based small businesses perceive this to be LESS of a barrier than the other three industries do.	Product: 1.59
		Technical: -3.76
		Non-Technical: 1.17
		Construction: 2.84

Based on the Mann-Whitney results, technical service-based and product-based small businesses found data rights and export control regulations to be more of a barrier compared to those that provide nontechnical products and services to the DoD. This doesn't come as much of a surprise, as these two items generally do not apply to the other two industries. Technical service-based small businesses have a relatively easier time obtaining surety bonds for their contracts. Small businesses that produce products for DoD have a relatively easier time getting paid for their work but have a harder time finding opportunities on government websites.

Experience as a Factor

We used the Spearman's rho correlation coefficient as a preliminary analysis of the relationship between each of the factors and length of business history with DoD. The coefficient measured the relationship between each of the factors and groups of businesses with various levels of experience (Figure 1), both of which are ordinal data. Fourteen of the factors presented correlation coefficients that were statistically significant. Of these 14 coefficients, all but one were negative, ranging from -.099 to -.263, indicating that the factors become less of a barrier as the business's level of experience increases. The one factor that provided a statistically significant positive trend was "government market being too uncertain or unstable," with a correlation coefficient of .084.

We broke the responses into independent groups by level of experience and again used the Mann-Whitney and Kruskal-Wallis statistical tests to look for differences. Ten of the 26 factors did present statistical differences between the groups based on the Mann-Whitney pairwise analysis. These 10 factors and associated Kruskal-Wallis *z* values are shown in Table 2.

TABLE 2. STATISTICALLY SIGNIFICANT DIFFERENCES BETWEEN LEVELS OF DoD EXPERIENCE

Barrier	Result	Kruskal-Wallis *z* value
Government websites hard to use	The group of businesses with less than 2 years of experience perceives this to be MORE of a barrier than the groups of 10–20 and more than 20 years of experience.	< 2 years: 2.06
		2-5 years: -0.35
		5-10 years: 1.33
		10-20 years: -1.53
		> 20 years: -0.97
Government not providing enough time to submit proposals/bids	The group of businesses with less than 2 years of experience perceives this to be MORE of a barrier than the groups of businesses with 10–20 and more than 20 years of experience.	< 2 years: 2.12
		2-5 years: -0.65
		5-10 years: 1.43
		10-20 years: -1.09
		> 20 years: -1.30
Insufficient feedback on bids/proposals when failing to win contract	The group of businesses with less than 2 years of experience perceives this to be MORE of a barrier than the groups of 10–20 and more than 20 years of experience.	< 2 years: 2.25
		2-5 years: 0.82
		5-10 years: 0.46
		10-20 years: -1.11
		> 20 years: -1.94
Request for proposal/ quotation/bid documentation is too complex or difficult to understand	The group of businesses with less than 2 years of experience perceives this to be MORE of a barrier than the group with more than 20 years of experience.	< 2 years: 2.15
		2-5 years: -1.25
		5-10 years: 1.19
		10-20 years: -0.22
		> 20 years: -1.44
Data rights: government requesting proprietary information	The groups of businesses with less than 2 and 2–5 years of experience perceive this to be LESS of a barrier than the group with more than 20 years of experience.	< 2 years: -0.81
		2-5 years: -1.94
		5-10 years: -0.22
		10-20 years: -0.14
		> 20 years: 2.68
Contract documents are too long and complex to understand	The group of businesses with less than 2 years of experience perceives this to be MORE of a barrier than the groups of 10–20 and more than 20 years of experience.	< 2 years: 2.38
		2-5 years: 0.40
		5-10 years: 0.28
		10-20 years: -1.13
		> 20 years: -1.32

TABLE 2. STATISTICALLY SIGNIFICANT DIFFERENCES BETWEEN LEVELS OF DoD EXPERIENCE, CONTINUED

Barrier	Result	Kruskal-Wallis *z* value
Certified cost data difficult to provide	The groups of businesses with less than 2 and 2–5 years of experience perceive this to be MORE of a barrier than the group with more than 20 years of experience.	< 2 years: 2.31
		2-5 years: 1.09
		5-10 years: -0.03
		10-20 years: 0.00
		> 20 years: -2.66
Surety bonds being difficult to obtain	The group of businesses with less than 2 years of experience perceives this to be MORE of a barrier than all four groups with more than 2 years of experience.	< 2 years: 4.01
		2-5 years: -0.02
		5-10 years: -0.37
		10-20 years: -1.62
		> 20 years: -1.02
Past-performance rating difficult to obtain	The groups of businesses with less than 2 and 2–5 years of experience perceive this to be MORE of a barrier than the groups of 10–20 and more than 20 years of experience.	< 2 years: 3.90
		2-5 years: 2.67
		5-10 years: -0.02
		10-20 years: -2.85
		> 20 years: -2.13
Government accounting standards difficult to meet	All four groups of businesses with less than 20 years of experience perceive this to be MORE of a barrier than the group with more than 20 years of experience.	< 2 years: 2.34
		2-5 years: 1.10
		5-10 years: 1.93
		10-20 years: -0.97
		> 20 years: -3.57

Small businesses with less experience found nine of these 10 factors to be more of a barrier than did those businesses with more experience. The pairwise analysis we conducted showed that the point at which differences became statistically significant between groups did vary by factor. Six of the factors were perceived to be more of a challenge by those with less than two years of experience when compared to those with more experience; two factors were perceived to be more of a challenge by all businesses with less than 5 years of experience when compared to those with more. All businesses with less than 20 years of experience found government accounting standards more difficult than those with more than 20 years of defense experience. Four of these factors, which are "extra" requirements unique to defense business, do not come as much of a surprise: certified cost data, government accounting standards, having satisfactory past

performance with the government, and surety bonds. Newer small businesses also view the lack of feedback from proposals and the complexity of documentation as deterrents to pursuing additional defense opportunities. The government requesting data rights or proprietary information was perceived as less of a barrier by small businesses with less than 5 years of DoD experience when compared to those with more than 20 years of experience. This is possibly because they do not have as much proprietary information or they may have more flexibility sharing it to get their foot in the door with government contracts.

> ***Small businesses with extensive defense experience view competition from others as much of a barrier as those just breaking into the defense market.***

Equally as important, many factors did not statistically vary by level of experience. Small businesses with extensive defense experience view competition from others as much of a barrier as those just breaking into the defense market. The same holds true for levels of profit and the other factors not mentioned in Table 3.

Size Qualifications

We broke the respondents into four independent groups based on number of employees: 1–10, 11–30, 31–100, and more than 100. We again used Spearman's rho correlation coefficient as a preliminary analysis of the relationship between the factors and number of employees. This time eight of the 26 factors presented correlation coefficients that were statistically significant. Seven of these presented negative correlation coefficients, ranging from -.08 to -.215, indicating a slight trend that the factors become less of an issue as business size increases. However, the trend is fairly weak, as the majority of the factors do not present statistically significant correlation coefficients. The one factor that provided a statistically significant positive trend was "profits too low," with a correlation coefficient of .142.

We again broke out the respondents into four independent groups by number of employees and used the Kruskal-Wallis and Mann-Whitney tests to examine statistically significant differences in the median response. Eight of the 26 factors were statistically significant based on the Mann-Whitney pairwise analysis. These factors and their associated Kruskal-Wallis z values are shown in Table 3.

TABLE 3. STATISTICALLY SIGNIFICANT DIFFERENCES BY COMPANY SIZE

Barrier	Result	Kruskal-Wallis *z* value
Government websites hard to use	The group of businesses with 10 or fewer employees perceives this to be MORE of a barrier than the group with more than 100 employees.	1-10 employees: 1.18
		11-30 employees: 0.20
		31-100 employees: 0.30
		>100 employees: -2.29
Request for proposal/quotation/ bid documentation is too complex or difficult to understand	All three groups of businesses with 100 or fewer employees perceive this to be MORE of a barrier than the group with more than 100 employees.	1-10 employees: 0.97
		11-30 employees: 0.33
		31-100 employees: 0.52
		>100 employees: -2.40
Profits too low	The group of businesses with 10 or fewer employees perceives this to be LESS of a barrier than all three groups with more than 10 employees.	1-10 employees: -3.35
		11-30 employees: 1.24
		31-100 employees: 0.93
		>100 employees: 2.18
Contract documents are too long and complex to understand	The groups of businesses with 1–10 and 11–30 employees perceive this to be MORE of a barrier than the group with more than 100 employees.	1-10 employees: 0.75
		11-30 employees: 1.90
		31-100 employees: -0.76
		>100 employees: -2.39
Certified cost data difficult to obtain	The groups of businesses with 1–10 and 11–30 employees perceive this to be MORE of a barrier than the groups with 31-100 and more than 100 employees.	1-10 employees: 2.51
		11-30 employees: 1.34
		31-100 employees: -1.94
		>100 employees: -2.76
Past-performance rating is difficult to obtain	The groups of businesses with 1–10 and 11–30 employees perceive this to be MORE of a barrier than the groups with 31–100 and more than 100 employees.	1-10 employees: 2.61
		11-30 employees: 1.59
		31-100 employees: -2.52
		>100 employees: -2.42

TABLE 3. STATISTICALLY SIGNIFICANT DIFFERENCES BY COMPANY SIZE, CONTINUED

Barrier	Result	Kruskal-Wallis *z* value
Government accounting standards difficult to meet	The groups of businesses with 1–10 and 11–30 employees perceive this to be MORE of a barrier than the groups with 31–100 and more than 100 employees.	1-10 employees: 3.74
		11-30 employees: 1.73
		31-100 employees: -3.05
		>100 employees: -3.60
Government regulations are too difficult to understand	The groups of businesses with 1–10 and 11–30 employees perceive this to be MORE of a barrier than the groups with 31–100 and more than 100 employees.	1-10 employees: 1.40
		11-30 employees: 2.81
		31-100 employees: -1.07
		>100 employees: -2.54

Smaller small businesses found seven of these eight factors to be more of a barrier than larger ones. A pairwise analysis again showed that the point at which differences became statistically different did vary some between the factors. Five of the factors, including three of the "extra" requirements specific to government contracts, were perceived to be more of a challenge by businesses with 30 or fewer employees when compared to the larger businesses. Businesses with fewer than 10 employees found government websites and government regulations to be more burdensome when compared to the larger small businesses with more than 100 employees. All businesses with fewer than 100 employees perceived RFP documentation to be complex when compared to businesses with more than 100 employees. Businesses with fewer than 10 employees perceived profits (or lack thereof) as less of a barrier to defense contracts when compared to larger businesses. Again, this possibly indicates that smaller businesses are more willing to sacrifice higher profits to get in the door with government contracts. We found no statistical evidence to support the idea that the larger companies perceive competition from other firms as less of a barrier than those smaller companies with only a handful of employees; the same holds true for the other factors not mentioned in Table 3.

Ideas for a Micro-Business Category

Six factors statistically proved to be more of a barrier by both businesses with less DoD experience and the smaller small businesses: government websites being hard to use, RFP documentation being too complex, contract documents being too complex, certified cost data being hard to provide, past-performance rating being hard to obtain, and government accounting standards being hard to meet. The creation of a defense micro-business category that focuses on reducing these six factors as barriers would likely improve participation from smaller and nontraditional small businesses. Based on the survey results, limiting the size qualifications to approximately 30 employees would be appropriate. Ideas for implementation of this category, provided by survey respondents, are shown below:

- Combine all of the relevant small business DoD websites into a single user-friendly one that shows all steps needed to properly develop and complete proposals. Also consider developing a central website that would help facilitate teaming among complementary small businesses.
- For technical proposals, use white papers as an initial screening process. The initial screening based solely on technical merit will help industry and government focus on technical content and avoid the preparation and review of lengthy proposals, saving both proposers and target agencies time and resources.
- Adopt commercial business practices, particularly commercial-style contracts. Tailor contracts to the greatest extent possible by eliminating clauses that do not apply to the particular contract.
- Ease up on past-performance requirements on these solicitations, particularly when new technology or innovation is important. Evaluate previous commercial experience as an alternative to looking only at past defense contracts on these solicitations.
- Make requirements for government-approved accounting systems less burdensome. Provide accounting software that would allow small businesses to be compliant with cost-reimbursement contracts rather than having them develop or source their own software.

Summary of Findings

We find that most of the factors preventing small businesses from participating in defense contracts identified in previous studies are widely perceived to exist. Of the 26 potential barriers surveyed, most were rather commonly perceived to exist ; 19 of them were rated as a "somewhat important" or "very important" barrier by more than half of

the respondents. Five of the factors provided statistically significant differences in perception between industries: government websites being hard to use, data rights, export control regulations, payment issues, and surety bonds being difficult to obtain. However, 21 of them did not, indicating the majority of the barriers we explored are perceived with no significant difference across industry types.

We did find statistical evidence to support the idea that businesses with less defense business experience perceive defense business to be more challenging than those with extensive defense experience. We also found support for smaller small businesses perceiving defense business to be more challenging than those larger businesses that still qualify for small business contracts. However, this turned out to be the case for only a minority of the factors we explored: nine factors were perceived as more of a barrier by businesses with less defense experience, seven factors were perceived as more of a barrier by the smaller small businesses, and six factors were perceived as more of a barrier by both businesses with less experience and the smaller small businesses. These six were government websites being hard to use, RFP documentation being too complex, contract documents being too complex, certified cost data being hard to provide, past-performance rating being hard to obtain, and government accounting standards being hard to meet.

One way to increase small business participation in defense contracts is to focus reform efforts in areas that small businesses perceive as barriers to defense contracts. The results of this study can be used to concentrate on reducing barriers that will have the largest effect. A concerted attempt to improve communication and response times will likely yield the best results, followed by simplifying the contract proposal process. Additionally, the creation of a micro-business category dedicated to reducing the factors that are more of a barrier to the smaller and newer businesses would likely increase participation in defense contracts by these "nontraditional" small businesses.

Author Note

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